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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------|------------------|
| 09/831,567   | 05/10/2001  | Gerhard Gille        | MO-6323/STA-         | 6933             |
| 157  | 7590        | 03/18/2005           | EXAMINER             |                  |
| BAYER MATERIAL SCIENCE LLC<br>100 BAYER ROAD<br>PITTSBURGH, PA 15205 |             |                      | WILKINS III, HARRY D |                  |
|  |             |                      | ART UNIT             | PAPER NUMBER     |
|  |             |                      | 1742                 |                  |

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/831,567             | GILLE ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Harry D Wilkins, III   | 1742                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 January 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 10-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alonso et al (XP-000874467) in view of Felten et al (FR 2,294,133).

Alonso et al teach the invention substantially as claimed. Alonso et al teach (see abstract) a method of forming tungsten carbides that includes gas-phase carburization of tungsten precursor compound (tungsten trioxide) at temperatures of 700-1100°C, which overlaps the claimed temperature range of 850 to 950°C. The examples disclosed by Alonso et al contain 39, 22 and 0% CO<sub>2</sub>. Though Alonso et al do not teach that the CO<sub>2</sub> content is above the Boudouard equilibrium content, based on the disclosure in the specification in Example 1 (page 8), 3% CO<sub>2</sub> is above this value, thus, 39 and 22% are also above the Boudouard equilibrium content.

However, Alonso et al do not teach that the carbon activity is between 0.4 to less than 1.

The specific examples disclosed by Alonso et al have carbon activities, calculated from Applicant's formula on page 3 of the specification, that are 0.026 (61 wt% CO), 0.077 (78 wt% CO) and essentially infinity (100 wt% CO). Thus, Alonso et al teach a broad range for the CO content, which relates to a carbon activity that

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encompasses the claimed range. Changes in temperatures, concentrations or other process conditions of an old process do not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. In re Aller et al (CCPA 1955) 220 F2d 454, 105 USPQ 233.

Applicant can overcome this rejection by showing that superior results are obtained only within the claimed range, and that outside of the claimed range, the superior results are not obtained. If the Applicant can show, through experimental data, that at values on either side of the claimed range of the carbon activity, such as 0.3 and 1.1, then this rejection would be overcome.

Alonso et al do not teach that after the powder is carburized, it is subjected to a heat treatment at 1150-1800°C.

Felten et al (FR 2,294,133) teach (see page 2) that the reaction  $\text{WO}_3 + 4\text{C} \rightarrow \text{WC} + 3\text{CO}$  proceeds at 1200-1500°C. Thus, if treated at this temperature, any  $\text{WO}_3$  would be converted to WC.

Therefore, it would have been obvious to one of ordinary skill in the art to have heat treated the powder of Alonso et al at 1200-1500°C as claimed as suggested by Felten et al in order to ensure that any remaining unreacted precursor  $\text{WO}_3$  after the process of Alonso et al would have been converted to WC.

Regarding claim 11, see above discussion of carbon activity.

Regarding claim 12, Alonso et al teach (see page 145) that powders are produced at 900 and 1100°C and are shown in Figure 8. Therefore, Alonso et al teach that the carburization occurs at 900°C.

Regarding claim 13, Alonso et al teach (see abstract) that the carburization treatment time is 6 hours.

Regarding claim 14, Alonso et al teach (see abstract) that the precursor material is tungsten trioxide ( $\text{WO}_3$ ).

### ***Response to Arguments***

3. Applicant's arguments filed 7 January 2005 have been fully considered but they are not persuasive. Applicant has argued that:

- a. Alonso et al teach away from using a CO-CO<sub>2</sub> mixture since pure CO is the "most appropriate".

In response, Applicant is reminded that the prior art should not be construed as being limited only to preferred embodiments. Alonso et al teach a broad range of gaseous compositions that are suitable, from 100% CO to 61% CO<sub>2</sub>. While Alonso et al does state that 100% CO is most preferable, Alonso et al nevertheless still teach other compositions for the atmosphere, a composition which is broader than and contains the presently claimed range.

- b. Alonso et al does not teach the claimed carbon activity.

In response, since the carbon activity is directly related to the proportions of CO and CO<sub>2</sub> in the gaseous atmosphere and Alonso et al teach an overlapping range of CO content, Alonso et al also teach an overlapping range of carbon activity.

- c. The rejection of the post heat treatment in view of Felton et al is based on an assumption by the Examiner.

In response, the Examiner believes that no assumption was made in rejecting the post heat treatment in view of Felton et al. The reasoning behind the rejection is this: at the end of the processing of Alonso et al, some of the precursor tungsten oxide might still remain in unreacted form. Thus, one of ordinary skill in the art would have sought to make a more pure tungsten carbide product. Since the tungsten oxide reacts with CO at the temperatures disclosed by Felton et al, one of ordinary skill in the art would have performed such a heat treatment/reaction in order to create a more pure product tungsten carbide by ensuring as much of the tungsten oxide precursor material had been reacted.

#### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-Th 10am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Harry D Wilkins, III  
Examiner  
Art Unit 1742

hdw

  
**ROY KING**  
**SUPERVISORY PATENT EXAMINER**  
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